THE FOLLOWING IS THE ENGLISH TRANSLATION OF THE AMENDMENTS TO THE CLAIMS OF THE INTERNATIONAL APPLICATION UNDER PCT ARTICLE 19:
AMENDED SHEETS (Pages 19-26).

CLAIMS

[1] (amended) A compressor for compressing air applied to a jet engine, the compressor characterized by comprising:

a titanium compressor case composed of a titanium alloy;

a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium rotor blades at even intervals and being rotatable around a case axial center of the titanium compressor case,

wherein each of the titanium rotor blades includes;

a rotor blade main body composed of a titanium alloy;

a deposition layer formed at a tip end portion of the rotor blade main body, the deposition layer being formed by using a first electrode composed of a first molded body molded from a powder of a cobalt-chromium alloy or a nickel alloy, or the first molded body processed with a heat treatment, generating pulsing electric discharges between the tip end portion of the rotor blade main body and the first electrode in an electrically insulating liquid or gas, and welding a material of the first electrode or a reacting substance of the material of the first electrode on the tip end portion of the blade main body by means of energy of the electric discharges; and

an abrasive coating having abrasiveness formed at a blade pressure side of the deposition layer, the abrasive coating being formed by using a second electrode composed of a second molded body molded from a mixed powder including a powder of a metal and a powder of a ceramic or the second electrode processed with a heat treatment, generating pulsing electric discharges between the blade pressure side of the deposition layer and the second electrode in an electrically insulating liquid or gas, and welding a material of the second electrode or a reacting substance of the material of the second electrode on the blade pressure side of the deposition layer by means of energy of the electric discharges.

[2] (amended) A compressor for compressing air applied to a jet engine, the compressor characterized by comprising:

a titanium compressor case composed of a titanium alloy;

a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium rotor blades at even intervals and being rotatable around a case axial center of the titanium compressor case,

wherein each of the titanium rotor blades includes;

a rotor blade main body composed of a titanium alloy;

a deposition layer formed at a tip end portion of the rotor blade main body, the deposition layer being formed by using a first electrode composed of a first molded body molded from a powder of a cobalt-chromium alloy or a nickel alloy, or the first molded body processed with a heat treatment, generating pulsing electric discharges between the tip end portion of the rotor blade main body and the first electrode in an electrically insulating liquid or gas, and welding a material of the first electrode or a reacting substance of the material of the first electrode on the tip end portion of the blade main body by means of energy of the electric discharges; and

an abrasive coating having abrasiveness formed at a blade pressure side of the deposition layer, the abrasive coating being formed by using a second electrode composed of a solid body of Si, a second molded body molded from a powder of Si, or the second molded body processed with a heat treatment, generating pulsing electric discharges between the blade pressure side of the deposition layer and the second electrode in an electrically insulating oil, and welding a material of the second electrode or a reacting substance of the material of the second electrode on the blade pressure side of the deposition layer by means of energy of the electric discharges.

[3] The compressor recited in claim 1 or claim 2, characterized in that fused portions are respectively generated at a boundary between the deposition layer and the tip end portion of the rotor blade main body and a boundary between the abrasive coating and the deposition layer, in each of the fused portions a composition ratio grading in its thickness direction, the fused portions being constituted so as to be 3μm or more and 20μm or less in thickness.

[4] (amended) A compressor for compressing air applied to a jet engine,

the compressor characterized by comprising:

a titanium compressor case composed of a titanium alloy;

a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium rotor blades at even intervals and being rotatable around a case axial center of the titanium compressor case,

wherein each of the titanium rotor blades includes;

a rotor blade main body composed of a titanium alloy; and

an abrasive coating having abrasiveness formed at a portion ranging from a blade pressure side to a leading end side of the rotor blade main body, the abrasive coating being formed by using an electrode composed of a molded body molded from a mixed powder including a powder of a metal and a powder of a ceramic or a powder of an electrically conductive ceramic, or the electrode processed with a heat treatment, generating pulsing electric discharges between the portion ranging from the blade pressure side to the leading end side of the rotor blade main body and the electrode in an electrically insulating liquid or gas, and welding a material of the electrode or a reacting substance of the material of the electrode on the portion ranging from the blade pressure side to the leading end side of the rotor blade main body by means of energy of the electric discharges.

[5] (amended) A compressor for compressing air applied to a jet engine, the compressor characterized by comprising:

a titanium compressor case composed of a titanium alloy;

a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium rotor blades at even intervals and being rotatable around a case axial center of the titanium compressor case,

wherein each of the titanium rotor blades includes;

a rotor blade main body composed of a titanium alloy; and

an abrasive coating having abrasiveness formed at a portion ranging from a blade pressure side to a leading end side of the rotor blade main body, the abrasive coating being formed by using an electrode composed of a solid body of Si, a molded body molded from a powder of Si, or the molded body processed with a heat treatment,

generating pulsing electric discharges between the portion ranging from the blade pressure side to the leading end side of the rotor blade main body and the electrode in an electrically insulating oil, and welding a material of the electrode or a reacting substance of the material of the electrode on the portion ranging from the blade pressure side to the leading end side of the rotor blade main body by means of energy of the electric discharges.

[6] The compressor recited in claim 4 or claim 5, characterized in that a fused portion is generated at a boundary between the abrasive coating and the deposition layer, in the fused portion a composition ratio grades in its thickness direction, the fused portion being constituted so as to be 3μm or more and 20μm or less in thickness.

[7] The compressor recited in claim 1 or claim 4, characterized in that the ceramic is any one material or any two or more mixed materials from cBN, TiC, TiN, TiAlN, TiB_2, WC, SiC, Si_3N_4, Cr_3C_2, Al_2O_3, ZrO_2-Y, ZrC, VC and B_4C.

[8] A titanium rotor blade applied to a compressor in a jet engine, the titanium rotor blade characterized by comprising:

a rotor blade main body composed of a titanium alloy;

a deposition layer formed at a tip end portion of the rotor blade main body, the deposition layer being formed by using a first electrode composed of a first molded body molded from a powder of a cobalt-chromium alloy or a nickel alloy, or the first molded body processed with a heat treatment, generating pulsing electric discharges between the tip end portion of the rotor blade main body and the first electrode in an electrically insulating liquid or gas, and welding a material of the first electrode or a reacting substance of the material of the first electrode on the tip end portion of the blade main body by means of energy of the electric discharges; and

an abrasive coating having abrasiveness formed at a blade pressure side of the deposition layer, the abrasive coating being formed by using a second electrode composed of a second molded body molded from a mixed powder including a powder of a metal and a powder of a ceramic or the second electrode processed with a

heat treatment, generating pulsing electric discharges between the blade pressure side of the deposition layer and the second electrode in an electrically insulating liquid or gas, and welding a material of the second electrode or a reacting substance of the material of the second electrode on the blade pressure side of the deposition layer by means of energy of the electric discharges.

[9] A titanium rotor blade applied to a compressor in a jet engine, the titanium rotor blade characterized by comprising:

a rotor blade main body composed of a titanium alloy;

a deposition layer formed at a tip end portion of the rotor blade main body, the deposition layer being formed by using a first electrode composed of a first molded body molded from a powder of a cobalt-chromium alloy or a nickel alloy, or the first molded body processed with a heat treatment, generating pulsing electric discharges between the tip end portion of the rotor blade main body and the first electrode in an electrically insulating liquid or gas, and welding a material of the first electrode or a reacting substance of the material of the first electrode on the tip end portion of the blade main body by means of energy of the electric discharges; and

an abrasive coating having abrasiveness formed at a blade pressure side of the deposition layer, the abrasive coating being formed by using a second electrode composed of a solid body of Si, a second molded body molded from a powder of Si, or the second molded body processed with a heat treatment, generating pulsing electric discharges between the blade pressure side of the deposition layer and the second electrode in an electrically insulating oil, and welding a material of the second electrode or a reacting substance of the material of the second electrode on the blade pressure side of the deposition layer by means of energy of the electric discharges.

[10] The titanium rotor blade recited in claim 8 or claim 9, characterized in that fused portions are respectively generated at a boundary between the deposition layer and the tip end portion of the rotor blade main body and a boundary between the abrasive coating and the deposition layer, in each of the fused portions

a composition ratio grading in its thickness direction, the fused portions being constituted so as to be 3μm or more and 20μm or less in thickness.

[11] A titanium rotor blade applied to a compressor in a jet engine, the titanium rotor blade characterized by comprising:

a rotor blade main body composed of a titanium alloy; and

an abrasive coating having abrasiveness formed at a portion ranging from a blade pressure side to a leading end side of the rotor blade main body, the abrasive coating being formed by using an electrode composed of a molded body molded from a mixed powder including a powder of a metal and a powder of a ceramic or a powder of an electrically conductive ceramic, or the electrode processed with a heat treatment, generating pulsing electric discharges between the portion ranging from the blade pressure side to the leading end side of the rotor blade main body and the electrode in an electrically insulating liquid or gas, and welding a material of the electrode or a reacting substance of the material of the electrode on the portion ranging from the blade pressure side to the leading end side of the rotor blade main body by means of energy of the electric discharges.

[12] A titanium rotor blade applied to a compressor in a jet engine, the titanium rotor blade characterized by comprising:

a rotor blade main body composed of a titanium alloy; and

an abrasive coating having abrasiveness formed at a portion ranging from a blade pressure side to a leading end side of the rotor blade main body, the abrasive coating being formed by using an electrode composed of a solid body of Si, a molded body molded from a powder of Si, or the molded body processed with a heat treatment, generating pulsing electric discharges between the portion ranging from the blade pressure side to the leading end side of the rotor blade main body and the electrode in an electrically insulating oil, and welding a material of the electrode or a reacting substance of the material of the electrode on the portion ranging from the blade pressure side to the leading end side of the rotor blade main body by means of energy of the electric discharges.

[13] (amended) The titanium rotor blade recited in claim 11 or claim

12, characterized in that a fused portion is generated at a boundary between the abrasive coating and the rotor blade main body, in the fused portion a composition ratio grades in its thickness direction, the fused portion being constituted so as to be 3μm or more and 20μm or less in thickness.

[14] The titanium rotor blade recited in claim 8 or claim 11, characterized in that the ceramic is any one material or any two or more mixed materials from cBN, TiC, TiN, TiAlN, TiB_2, WC, SiC, Si_3N_4, Cr_3C_2, Al_2O_3, ZrO_2-Y, ZrC, VC and B_4C.

[15] A compressor characterized by comprising the titanium rotor blade recited in any claim from claim 8 to claim 14.

[16] A jet engine characterized by comprising the compressor recited in any claim of from claim 1 to claim 7 and claim 15.

[17] A production method of a titanium rotor blade for producing the titanium rotor blade from a rotor blade main body composed of a titanium alloy, the production method of the titanium rotor blade characterized by producing the titanium rotor blade from the rotor blade main body, by:

forming a deposition layer at a tip end portion of the rotor blade main body by using a first electrode composed of a first molded body molded from a powder of a cobalt-chromium alloy or a nickel alloy, or the first molded body processed with a heat treatment, generating pulsing electric discharges between the tip end portion of the rotor blade main body and the first electrode in an electrically insulating liquid or gas, and welding a material of the first electrode or a reacting substance of the material of the first electrode on the tip end portion of the blade main body by means of energy of the electric discharges; and

forming an abrasive coating having abrasiveness at a blade pressure side of the deposition layer by using a second electrode composed of a second molded body molded from a mixed powder including a powder of a metal and a powder of a ceramic or the second electrode processed with a heat treatment, generating pulsing electric discharges between the blade pressure side of the deposition layer and the second electrode in an electrically insulating liquid or gas, and welding a material of the second electrode or a reacting

substance of the material of the second electrode on the blade pressure side of the deposition layer by means of energy of the electric discharges.